

III. REMARKS/ARGUMENTS

Applicant gratefully acknowledges the potential allowability of claims 3-7, 16, 19, 64 and 66.

A. Remarks Concerning Elected Claims

Applicant respectfully submits that claims 8, 9, 56 and 57 were inadvertently omitted from the list of claims which read on the election made in the "Reply to Restriction Requirement" filed in the USPTO on December 24, 2003¹. It is respectfully submitted that claims 8, 9, 56 and 57 were intended to be included in the list of claims that read on the election. In fact, it is noted that claims 8, 9, 56 and 57 read on subspecies "6" related to the connection verification system (Figures 3 and 5). Accordingly, Applicant respectfully requests the Examiner to recognize Applicant's inadvertent non-election of claims 8, 9, 56 and 57. Amendments to the claims reflect Applicant's request for reconsideration of claims 8, 9, 56 and 57 (i.e., these claims are identified using the identifier "original").

Applicant also draws the Examiner's attention to the comment made on page 2 of the Office Action, where the Examiner indicated that elected claims 24-27, 39, 40, 45, 50-55, 58-60, 70 and 71 are "not examined at this time" since these claims "are drawn to optical switch matrices/switching core and a plurality of outputs which are not part of the elected species as shown in Figures 4 and 5"². To support his position, the Examiner referred Applicant to the Office Action dated January 26, 2003. On page 2 of that Office Action, the Examiner indicated that species "A"

¹ In the "Reply to Restriction Requirement", Applicant elected species "A" and further subspecies "1" related to the front end, and subspecies "6" related to the connection verification system. Applicant indicated that claims 1-7, 10-27, 39, 40, 45, 50-55, 58-61, and 63-71 read on this election.

² In point 2 of page 2 of the Office Action, the Examiner indicated that "[e]lected claims 25-27 (...) are not examined at this time" (emphasis added). However, in point 3 on the same page, the Examiner indicated that "claims 24-27 (...) are not part of the elected species [and therefore] only claims 1-7, 10-23, 61, and 63-69 (...) will be examined at this time" (emphasis added). It is assumed that point 2 was intended to read "[e]lected claims 24-27 (...) are not examined at this time" (emphasis added).

corresponds to Figure 3, with subspecies "1" related to the front end corresponding to Figure 4 and subspecies "6" related to the connection verification system corresponding to Figure 5.

Now, claim 24 is drawn to a switch for optical signals comprising a connection verification system, i.e. the connection verification system in its immediate environment. As such, Applicant respectfully submits that claim 24 is part of the elected species and fully supported by Figure 3. Furthermore, Applicant respectfully submits that claims 25-27, 39, 40, 45, 50-55, 58-60, 70 and 71 depend either directly or indirectly on claim 24 and are part of the elected subspecies and fully supported by Figures 3, 4 and 5. Specifically, claims 25-27 and 70 are fully supported by Figure 3; claims 39, 40, 45 and 71 are fully supported by Figures 3 and 4; and claims 50-55 and 58-60 are fully supported by Figures 3 and 5.

Accordingly, Applicant respectfully submits that claims 24-27, 39, 40, 45, 50-55, 58-60, 70 and 71 are indeed part of the elected species and subspecies and should therefore have been examined. Applicant respectfully requests the Examiner to reconsider his non-examination of claims 24-27, 39, 40, 45, 50-55, 58-60, 70 and 71. Amendments to the claims reflect Applicant's request for reconsideration of claims 24-27, 39, 40, 45, 50-55, 58-60, 70 and 71 (i.e., these claims are not identified as being "withdrawn").

B. Summary of the Amendments

The drawings have been amended in order to conform to a requirement made by the Examiner.

Claim 1 has been amended. Support for the amendment made to claim 1 can be found, *inter alia*, on page 6, lines 31-35 of the specification as originally filed.

Claims 7, 55 and 64 have been amended in order to correct minor informalities detected by Applicant upon reviewing the application.

It is respectfully submitted that no new matter has been added to the present application under the present amendment.

C. Summary of Rejections and Reply

1) Rejection of claims 1, 2, 11-15, 17, 18, 20-23, 61, 65 and 67-69 under 35 USC 103

In the Office Action, the Examiner has rejected claims 1, 2, 11-15, 17, 18, 20-23, 61, 65 and 67-69 under 35 USC 103(a) as being unpatentable over Fatehi et al. U.S. Patent No. 6,600,581 (hereinafter referred to as "Fatehi"). As set forth herein below, Applicant respectfully submits that claims 1, 2, 11-15, 17, 18, 20-23, 61, 65 and 67-69 now on record are in condition for allowance.

Independent claim 1

The Examiner's attention is directed to the following limitations of amended claim 1:

A system for verifying connections established through a switching unit adapted to receive a plurality of input signals and output a plurality of switched signals, comprising:

a selection unit for controllably admitting individual ones of the input signals and individual ones of the switched signals; and

a verification unit connected to the selection unit, for controlling operation of the selection unit as a function of a connection map and correlating the individual ones of the input signals admitted by the selection unit with the individual ones of the switched signals admitted by the selection unit so as to

identify connections established through the switching unit and determine their consistency with the connection map.

It is respectfully submitted that Fatehi does not explicitly disclose or implicitly suggest the above-emphasized limitations of claim 1.

Fatehi does not teach or suggest a system which correlates input signals with switched signals to verify connections established through a switching unit. Rather, Fatehi describes a connection verification system for an optical cross-connect in which a connection verification message is tagged onto a signal at a cross-connect input and retrieved at a cross-connect output using tag read/write elements. It is the retrieved connection verification message that is used to determine whether the signal was routed in accordance with a cross-connect map (col. 2, lines 47-56 and col. 4, line 61 to col. 5, line 12). Specifically, Fatehi's system performs a check to see if "routing-related information in the connection verification message" retrieved at the cross-connect output corresponds to predetermined connection information in the cross-connect map to determine whether the correct cross-connect connection has been made (col. 8, lines 4-13). This check in no way relates to correlating the signal at the cross-connect input with the signal at the cross-connect output. In fact, Fatehi's check involves only the connection verification message retrieved at the cross-connect output and the cross-connect map, and doesn't even involve the signal at the cross-connect input. Clearly, therefore, Fatehi does not teach or suggest the claimed limitation of "a verification unit connected to the selection unit, for (...) correlating the individual ones of the input signals admitted by the selection unit with the individual ones of the switched signals admitted by the selection unit so as to identify connections established through the switching unit and determine their consistency with the connection map."

In light of the above, it is respectfully submitted that at least one limitation of claim 1 as amended is neither taught nor suggested by the cited art. Therefore, Applicant respectfully submits that at least one criterion required for establishing a

prima facie case of obviousness in accordance with MPEP 706.02(j) is not satisfied³. The Examiner is thus respectfully requested to withdraw his rejection of claim 1. It is respectfully submitted that claim 1 is in condition for allowance.

Dependent claims 2 and 11-14

Claims 2 and 11-14 depend either directly or indirectly on claim 1 and therefore include all of the limitations of claim 1. Hence, for the same reasons as those set forth herein above in respect of claim 1, Applicant respectfully submits that claims 2 and 11-14 are in condition for allowance. The Examiner is therefore respectfully requested to withdraw his rejection of claims 2 and 11-14.

Independent claim 15

The Examiner's attention is directed to the following limitations of claim 15:

A method of validating connections established through a switching unit adapted to receive a plurality of input signals and output a plurality of switched signals, comprising:

selecting one of the input signals;

on the basis of a connection map, identifying a particular one of the switched signals as expected to be correlated with the selected input signal;

determining a level of correlation or anti-correlation between the selected input signal and the switched signal expected to be correlated with the selected input signal; and

if the level of correlation is significant or the level of anti-correlation is insignificant, concluding that the connection involving the selected input signal is consistent with the connection map.

³ For the Examiner to establish a *prima facie* case of obviousness, three criteria must be considered: (1) there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine the reference teachings, (2) there must be a reasonable expectation of success, and (3) the prior art references must teach or suggest all of the claim limitations. MPEP §§ 706.02(j), 2142 (8th ed.).

It is respectfully submitted that Fatehi does not explicitly disclose or implicitly suggest the above-emphasized limitations of claim 15.

Fatehi does not teach or suggest a system which determines a level of correlation or anti-correlation between input signals and switched signals to validate connections established through a switching unit. Rather, Fatehi describes a connection verification system for an optical cross-connect in which a connection verification message is tagged onto a signal at a cross-connect input and retrieved at a cross-connect output using tag read/write elements. It is the retrieved connection verification message that is used to determine whether the signal was routed in accordance with a cross-connect map (col. 2, lines 47-56 and col. 4, line 61 to col. 5, line 12). Specifically, Fatehi's system performs a check to see if "routing-related information in the connection verification message" retrieved at the cross-connect output corresponds to predetermined connection information in the cross-connect map to determine whether the correct cross-connect connection has been made (col. 8, lines 4-13). This check in no way relates to determining a level of correlation or anti-correlation between the signal at the cross-connect input and the signal at the cross-connect output. In fact, Fatehi's check involves only the connection verification message retrieved at the cross-connect output and the cross-connect map, and doesn't even involve the signal at the cross-connect input. Clearly, therefore, Fatehi does not teach or suggest a first limitation of claim 15, namely "determining a level of correlation or anti-correlation between the selected input signal and the switched signal expected to be correlated with the selected input signal".

Furthermore, since Fatehi neither teaches nor suggests determining a level of correlation or anti-correlation between signals, Fatehi cannot possibly be held to teach or suggest deriving any conclusions on the basis of such level of correlation or anti-correlation. It is plain to conclude that Fatehi cannot possibly be held to teach or suggest a second limitation of claim 15, namely "concluding that the connection involving the selected input signal is consistent with the connection map", "if the level of correlation is significant or the level of anti-correlation is insignificant".

In light of the above, it is respectfully submitted that at least one limitation of claim 15 is neither taught nor suggested by the cited art. Therefore, Applicant respectfully submits that at least one criterion required for establishing a *prima facie* case of obviousness in accordance with MPEP 706.02(j) is not satisfied. The Examiner is thus respectfully requested to withdraw his rejection of claim 15. It is respectfully submitted that claim 15 is in condition for allowance.

Dependent claims 17 and 18

Claims 17 and 18 depend directly on claim 15 and therefore include all of the limitations of claim 15. Hence, for the same reasons as those set forth herein above in respect of claim 15, Applicant respectfully submits that claims 17 and 18 are in condition for allowance. The Examiner is therefore respectfully requested to withdraw his rejection of claims 17 and 18.

Independent claim 20

The Examiner's attention is directed to the following limitations of claim 20:

A system for validating connections established through a switching unit adapted to receive a plurality of input signals and output a plurality of switched signals, comprising:

means for selecting one of the input signals;

means for identifying, for each selected input signal and on the basis of a connection map, a particular one of the switched signals as expected to be correlated with the selected input signal;

means for determining a level of correlation or anti-correlation between the selected input signal and the switched signal expected to be correlated with the selected input signal; and

means for concluding that the connection involving the selected input signal is consistent with the connection map if the level of correlation is significant or the level of anti-correlation is insignificant.

Applicant respectfully submits that the language of claim 20 is similar to that of claim 15. Thus, for the same reasons as those set forth herein above in respect of claim 15, it is respectfully submitted that Fatehi does not explicitly disclose or implicitly suggest the above-emphasized limitations of claim 20.

Accordingly, it is respectfully submitted that at least one limitation of claim 20 is neither taught nor suggested by the cited art. Therefore, Applicant respectfully submits that at least one criterion required for establishing a *prima facie* case of obviousness in accordance with MPEP 706.02(j) is not satisfied. The Examiner is thus respectfully requested to withdraw his rejection of claim 20. It is respectfully submitted that claim 20 is in condition for allowance.

Independent claim 21

The Examiner's attention is directed to the following limitations of claim 21:

An apparatus for validating connections established through a switching unit adapted to receive a plurality of input signals and output a plurality of switched signals, comprising:

- a mechanism constructed and adapted to select one of the input signals;
- a mechanism constructed and adapted to identify, for each selected input signal and on the basis of a connection map, a particular one of the switched signals as expected to be correlated with the selected input signal;
- a mechanism constructed and adapted to determine a level of correlation or anti-correlation between the selected input signal and the switched signal expected to be correlated with the selected input signal; and**
- a mechanism constructed and adapted to conclude that the connection involving the selected input signal is consistent with the connection map if the level of correlation is significant or the level of anti-correlation is insignificant.**

Applicant respectfully submits that the language of claim 21 is similar to that of claim 15. Thus, for the same reasons as those set forth herein above in respect of claim 15, it is respectfully submitted that Fatehi does not explicitly disclose or implicitly suggest the above-emphasized limitations of claim 21.

Accordingly, it is respectfully submitted that at least one limitation of claim 21 is neither taught nor suggested by the cited art. Therefore, Applicant respectfully submits that at least one criterion required for establishing a *prima facie* case of obviousness in accordance with MPEP 706.02(j) is not satisfied. The Examiner is thus respectfully requested to withdraw his rejection of claim 21. It is respectfully submitted that claim 21 is in condition for allowance.

Independent claim 22

The Examiner's attention is directed to the following limitations of claim 22:

Computer-readable media tangibly embodying a program of instructions executable by a computer to perform a method of validating connections established through a switching unit adapted to receive a plurality of input signals and output a plurality of switched signals, the method comprising:

selecting one of the input signals;

on the basis of a connection map, identifying a particular one of the switched signals as expected to be correlated with the selected input signal;

determining a level of correlation or anti-correlation between the selected input signal and the switched signal expected to be correlated with the selected input signal; and

if the level of correlation is significant or the level of anti-correlation is insignificant, concluding that the connection involving the selected input signal is consistent with the connection map.

Applicant respectfully submits that the language of claim 22 is similar to that of claim 15. Thus, for the same reasons as those set forth herein above in respect of

claim 15, it is respectfully submitted that Fatehi does not explicitly disclose or implicitly suggest the above-emphasized limitations of claim 22.

Accordingly, it is respectfully submitted that at least one limitation of claim 22 is neither taught nor suggested by the cited art. Therefore, Applicant respectfully submits that at least one criterion required for establishing a *prima facie* case of obviousness in accordance with MPEP 706.02(j) is not satisfied. The Examiner is thus respectfully requested to withdraw his rejection of claim 22. It is respectfully submitted that claim 22 is in condition for allowance.

Independent claim 23

The Examiner's attention is directed to the following limitations of claim 23:

At least one computer programmed to execute a process for validating connections established through a switching unit adapted to receive a plurality of input signals and output a plurality of switched signals, the process comprising:

selecting one of the input signals;

on the basis of a connection map, identifying a particular one of the switched signals as expected to be correlated with the selected input signal;

determining a level of correlation or anti-correlation between the selected input signal and the switched signal expected to be correlated with the selected input signal; and

if the level of correlation is significant or the level of anti-correlation is insignificant, concluding that the connection involving the selected input signal is consistent with the connection map.

Applicant respectfully submits that the language of claim 23 is similar to that of claim 15. Thus, for the same reasons as those set forth herein above in respect of claim 15, it is respectfully submitted that Fatehi does not explicitly disclose or implicitly suggest the above-emphasized limitations of claim 23.

Accordingly, it is respectfully submitted that at least one limitation of claim 23 is neither taught nor suggested by the cited art. Therefore, Applicant respectfully submits that at least one criterion required for establishing a *prima facie* case of obviousness in accordance with MPEP 706.02(j) is not satisfied. The Examiner is thus respectfully requested to withdraw his rejection of claim 23. It is respectfully submitted that claim 23 is in condition for allowance.

Independent claim 61

The Examiner's attention is directed to the following limitations of claim 61:

A system for correlating a first sample stream with a second sample stream, comprising:

a first delay line for receiving the first sample stream, comprising a plurality of taps interspersed by delay elements;

a second delay line for receiving the second sample stream, comprising a plurality of taps interspersed by delay elements;

a plurality of anti-correlators, each having a first input connected to a tap in the first delay line and a second input connected to a tap in the second delay line, each anti-correlator being adapted to produce an anti-correlation value at a distinct relative delay; and

a minimum detector connected to the anti-correlators, for selecting the least among the anti-correlation values produced by the anti-correlators and providing the result to a controller.

It is respectfully submitted that Fatehi does not explicitly disclose or implicitly suggest the limitations of claim 61.

On page 3 of the Office Action, the Examiner has rejected claim 61 *without addressing any of the limitations of that claim*. In particular, the Examiner has not addressed whether or how Fatehi teaches or suggests:

- first and second delay lines each comprising a plurality of taps interspersed by delay elements;

- a plurality of anti-correlators each adapted to produce an anti-correlation value at a distinct relative delay; and
- a minimum detector for selecting the least among the anti-correlation values produced by the anti-correlators and providing the result to a controller.

Applicant respectfully submits that Fatehi neither discloses nor suggests any of the above-listed limitations of claim 61. If the Examiner maintains his rejection, the Examiner is respectfully requested to explain how Fatehi discloses the limitations of claim 61.

Accordingly, it is respectfully submitted that at least one limitation of claim 61 is neither taught nor suggested by the cited art. Therefore, Applicant respectfully submits that at least one criterion required for establishing a *prima facie* case of obviousness in accordance with MPEP 706.02(j) is not satisfied. The Examiner is thus respectfully requested to withdraw his rejection of claim 61. It is respectfully submitted that claim 61 is in condition for allowance.

Dependent claims 65 and 67-69

Claims 65 and 67-69 depend directly on claim 61 and therefore include all of the limitations of claim 61. Hence, for the same reasons as those set forth herein above in respect of claim 61, Applicant respectfully submits that claims 65 and 67-69 are in condition for allowance. The Examiner is therefore respectfully requested to withdraw his rejection of claims 65 and 67-69.

2) Rejection of claims 10 and 63 under 35 USC 103

In the Office Action, the Examiner has rejected claims 10 and 63 under 35 USC 103(a) as being unpatentable over Fatehi et al. U.S. Patent No. 6,600,581 (hereinafter referred to as "Fatehi") in view of Kusyk U.S. Patent No. 6,246,668

(hereinafter referred to as "Kusyk"). As set forth herein below, Applicant respectfully submits that claims 10 and 63 are in condition for allowance.

Dependent claim 10

Claim 10 depends directly on claim 1 and therefore includes all of the limitations of claim 1.

Firstly, as shown previously in respect of claim 1, Fatehi does not explicitly disclose or implicitly suggest the claimed limitation of "a verification unit connected to the selection unit, for (...) correlating the individual ones of the input signals admitted by the selection unit with the individual ones of the switched signals admitted by the selection unit so as to identify connections established through the switching unit and determine their consistency with the connection map."

Secondly, it is respectfully submitted that the Examiner has not shown that Kusyk teaches or suggests this same limitation of claim 1 (and thus of claim 10) that is already shown to be missing from Fatehi.

Accordingly, it is respectfully submitted that the Examiner has not shown that the cited art, whether taken separately or in combination, teaches or suggests all of the limitations of claim 10. Therefore, Applicant respectfully submits that at least one criterion required for establishing a *prima facie* case of obviousness in accordance with MPEP 706.02(j) is not satisfied. The Examiner is thus respectfully requested to withdraw his rejection of claim 10. It is respectfully submitted that claim 10 is in condition for allowance.

Dependent claim 63

Claim 63 depends directly on claim 61 and therefore includes all of the limitations of claim 61.

As mentioned previously in respect of claim 61, Fatehi neither teaches nor suggests the limitations of claim 61, including:

- first and second delay lines each comprising a plurality of taps interspersed by delay elements;
- a plurality of anti-correlators each adapted to produce an anti-correlation value at a distinct relative delay; and
- a minimum detector for selecting the least among the anti-correlation values produced by the anti-correlators and providing the result to a controller.

Secondly, it is respectfully submitted that the Examiner has not shown that Kusyk teaches or suggests these same limitations of claim 61 (and thus of claim 63) that are already shown to be missing from Fatehi.

Accordingly, it is respectfully submitted that the Examiner has not shown that the cited art, whether taken separately or in combination, teaches or suggests all of the limitations of claim 63. Therefore, Applicant respectfully submits that at least one criterion required for establishing a *prima facie* case of obviousness in accordance with MPEP 706.02(j) is not satisfied. The Examiner is thus respectfully requested to withdraw his rejection of claim 63. It is respectfully submitted that claim 63 is in condition for allowance.

IV. CONCLUSION

Applicant respectfully requests the Examiner to withdraw his objections to the drawings.

Applicant gratefully acknowledges the potential allowability of claims 3-7, 16, 19, 64 and 66.

Applicant respectfully requests the Examiner to withdraw his rejections of claims 1, 2, 10-15, 17, 18, 20-23, 61, 63, 65 and 67-69.

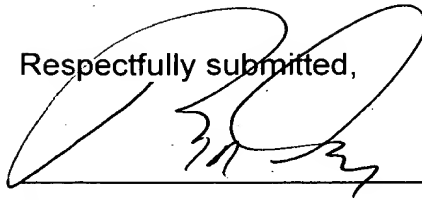
Applicant respectfully requests the Examiner to recognize Applicant's inadvertent non-election of claims 8, 9, 56 and 57.

Applicant respectfully requests the Examiner to reconsider his non-examination of claims 24-27, 39, 40, 45, 50-55, 58-60, 70 and 71

In view of the foregoing, Applicant is of the view that claims 1-27, 39, 40, 45, 50-61 and 63-71 are in condition for allowance. Favorable reconsideration is requested. Early allowance of the Application is earnestly solicited.

If the claims of the application are not considered to be in full condition for allowance, for any reason, Applicant respectfully requests the constructive assistance and suggestions of the Examiner in drafting one or more acceptable claims pursuant to MPEP 707.07(j) or in making constructive suggestions pursuant to MPEP 706.03 so that the application can be placed in allowable condition as soon as possible and without the need for further proceedings.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'R. A. Dowell', written over a horizontal line.

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